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DOUGHERTY CLEMENTS			LIN, KENNY S	
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CHARLOTTE,	NC 28211		2154	***·

DATE MAILED: 01/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

		Application No.	Applicant(s)				
Office Action Summary		09/650,254	CHIN, HON WAH				
		Examiner	Art Unit				
		Kenny Lin	2154				
Period for	<ul> <li>The MAILING DATE of this communication ap Reply</li> </ul>	pears on the cover sheet w	ith the correspondence add	ress			
WHICI - Extens after S - If NO   - Failure Any re	PRTENED STATUTORY PERIOD FOR REPL HEVER IS LONGER, FROM THE MAILING Designs of time may be available under the provisions of 37 CFR 1. IX (6) MONTHS from the mailing date of this communication. Design of the properties of the maximum statutory period et or reply within the set or extended period for reply will, by statute ply received by the Office later than three months after the mailing datent term adjustment. See 37 CFR 1.704(b).	DATE OF THIS COMMUNI- 136(a). In no event, however, may a re- will apply and will expire SIX (6) MON- e, cause the application to become Al	CATION. reply be timely filed NTHS from the mailing date of this com BANDONED (35 U.S.C. § 133).				
Status							
1) 🖂 🗆	Responsive to communication(s) filed on <u>03 I</u>	November 2005.					
-	<u> </u>	s action is non-final.					
• —	Since this application is in condition for allowa		ters, prosecution as to the r	merits is			
•	closed in accordance with the practice under	·					
	on of Claims						
· ·		application					
-	Claim(s) <u>1-5,7 and 9-21</u> is/are pending in the application.  4a) Of the above claim(s) is/are withdrawn from consideration.						
	Claim(s) is/are allowed.						
• —	☐ Claim(s) is/are allowed. ☐ Claim(s) <u>1-5,7 and 9-21</u> is/are rejected.						
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• —	Claim(s) are subject to restriction and/	or election requirement					
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Application	on Papers						
, —	The specification is objected to by the Examin						
10)□ 7	The drawing(s) filed on is/are: a)☐ ac	cepted or b)  objected to	by the Examiner.				
	Applicant may not request that any objection to the	e drawing(s) be held in abeya	nce. See 37 CFR 1.85(a).				
	Replacement drawing sheet(s) including the corre	ction is required if the drawing	(s) is objected to. See 37 CFF	₹ 1.121(d).			
11) 🗌 🏾	The oath or declaration is objected to by the E	xaminer. Note the attache	d Office Action or form PTC	D-152.			
Priority u	nder 35 U.S.C. § 119						
a)[	Acknowledgment is made of a claim for foreig ☐ All b) ☐ Some * c) ☐ None of: 1. ☐ Certified copies of the priority documer		§ 119(a)-(d) or (f).				
;	2.☐ Certified copies of the priority documer		Application No				
:	3. Copies of the certified copies of the pricapplication from the International Burea	ority documents have been au (PCT Rule 17.2(a)).	received in this National S	Stage			
* S	ee the attached detailed Office action for a lis	t of the certified copies not	received.				
Attachment	(s)						
1) Notice	of References Cited (PTO-892)		Summary (PTO-413)				
3) 🔲 Inform	e of Draftsperson's Patent Drawing Review (PTO-948) nation Disclosure Statement(s) (PTO-1449 or PTO/SB/08 No(s)/Mail Date		s)/Mail Date Informal Patent Application (PTO- 	152)			

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### **DETAILED ACTION**

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1. Claims 1-5, 7 and 9-21 are presented for examination. Claims 6 and 8 are canceled.

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# Claim Objections

2. Claims 1, 5, 14 and 18 are objected to under 37 CFR 1.75(c), as being of improper form for failing to further limit the subject matter of a previous claim limitation. Applicant is required to amend the claim(s) to place the claim(s) in proper form. These independent claims contain redundant limitations since the claim language "a counter that is incremented by a preselected step in value at each node the message packet is forwarded to along the chain network..." has the same meaning with the claim language "wherein the counter is incremented a number of times that is equal to the number of nodes the message packet is forwarded to along the chain network".

## Claim Rejections - 35 USC § 103

- 3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
  - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
- 4. Claims 1-5, 7, 9-10, 13-14 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Judd et al (Judd), US 5,465,251, in view of Saleh et al (Saleh), US 6,801,496.

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5. Judd and Saleh were cited in the previous office action.

- 6. As per claim 1, Judd taught the invention as claimed including an address protocol for forwarding a message packet from a source node to a destination node along a sequence of communicatively coupled nodes functioning as a linear chain network (col.2, lines 26-31, col.5, lines 55-59; strings), the address protocol comprising:
  - a. A relative source address field programmed with an initial value (0h) at the source node corresponding to a destination node that is a preselected number of nodes away from the source node along the linear chain network (col.2, lines 3-18, 32-41, col.6, lines 33-35, col.7, lines 64-67, col.8, lines 43-50); and
  - a counter that is decremented by a preselected step in value at each node the message packet is forwarded to along the chain network until the counter reaches the initial value, thereby indicating that the destination node has been reached (col.2, lines 3-18, 32-41, col.7, lines 55-63, col.8, lines 44-61; if Hi\_digit = 0h; accept the frame),
  - c. wherein the counter is decremented a number of times that is equal to the number of nodes the message packet is forwarded to along the chain network (col.2, lines 3-18, 32-41, col.7, lines 55-63, col.8, lines 44-61; if Hi\_digit = 0h; accept the frame); and
  - d. Wherein the destination node does not require address information in addition to the counter reaching the initial value to accept the message packet (col.2, lines 36-39).

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Judd did not specifically teach that the counter is incremented in value. However, since Judd taught that the counter is programmed with the initial value and the counter is **modified** at each node (col.2, lines 3-18, 31-41), it would have been obvious to increment the counter as a method of modifying the counter especially since decrementing is simply incrementing negative values. Saleh taught to increment counters at each node (col.8, lines 44-48). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Judd and Saleh because Saleh's teaching of setting the counter with a zero initial value and incrementing it at each node enables Judd's method to reach the same result by

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8. As per claim 5, Judd taught the invention substantially as claimed including an address protocol for forwarding a message packet from a source node to a destination node along a sequence of communicatively coupled nodes functioning as a linear chain network (col.2, lines 26-31, col.5, lines 55-59; strings), the address protocol comprising:

incrementing counter till it is equal to non-zero initial value instead of counting down to zero.

- a. An identifier field containing an identifier to identify the message packet as having a relative address protocol (col.6, lines 14-15);
- b. A relative source address field programmed with an initial value at the source node corresponding to a destination node that is a preselected number of nodes away from the source node along the linear chain network (col.2, lines 3-18, 32-41, col.6, lines 33-35, col.7, lines 64-67, col.8, lines 43-50); and

3-18, 32-41, col.8, lines 44-61),

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c. a counter that is decreased by a preselected step in value at each node the message packet is forwarded to along the chain network until the counter reaches the initial value, thereby indicating that the destination node has been reached (col.2, lines

- d. wherein the counter is decreased a number of times that is equal to the number of nodes the message packet is forwarded to along the chain network (col.2, lines 3-18, 32-41, col.7, lines 55-63, col.8, lines 44-61; if Hi\_digit = 0h; accept the frame); and
- e. Wherein the destination node does not require address information in addition to the counter reaching the initial value to accept the message packet (col.2, lines 36-39).
- Judd did not specifically teach that the counter is incremented in value. However, since Judd taught that the counter is programmed with the initial value and the counter is **modified** at each node (col.2, lines 3-18, 31-41), it would have been obvious to increment the counter as a method of modifying the counter especially since decrementing is simply incrementing negative values. Saleh taught to increment counters at each node (col.8, lines 44-48). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Judd and Saleh because Saleh's teaching of setting the counter with a zero initial value and incrementing it at each node enables Judd's method to reach the same result by incrementing counter till it is equal to non-zero initial value instead of counting down to zero.

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10. As per claim 14, Judd taught the invention as claimed including a method of sending a message packet along a portion of a network functioning as a linear chain network from a source node to a destination node using an address protocol having an identifier to identify the message packet as having a relative address protocol (col.2, lines 26-31, col.5, lines 55-59, col.6, lines 14-15), a relative source address field for storing an initial value, and a counter (col.2, lines 3-18, 32-41, col.7, lines 64-67), the method comprising the steps of:

a. Selecting the initial value to be a function of a desired number of node hops along the linear chain network from the source node (col.2, lines 3-18, 32-41, col.7, lines 64-67);

- b. Programming the relative source address field to have the initial value (col.2, lines 3-18, 32-41, col.7, lines 64-67);
- c. Adjusting the counter by a preselected step in value at each node that the message packet is forwarded to (col.2, lines 3-18, 32-41, col.8, lines 44-61); and
- d. Accepting the message packet at a destination node when the counter value reaches the initial value, without requiring address information in addition to the counter reaching the initial value to accept the message packet (col.2, lines 3-18, 32-41, col.8, lines 44-61),
- e. wherein the counter is adjusted a number of times that is equal to the number of nodes the message packet is forwarded to along the chain network (col.2, lines 3-18, 32-41, col.7, lines 55-63, col.8, lines 44-61; if Hi\_digit = 0h; accept the frame); and

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f. Wherein the preselected step in value is chosen so that the counter reaches the initial value when the packet has completed the desired number of node hops (col.2, lines 3-18, 32-41, col.8, lines 44-61).

- 11. Judd did not specifically teach that adjusting the counter is to increment it. However, since Judd taught that the counter is programmed with the initial value and the counter is **modified** at each node (col.2, lines 3-18, 31-41), it would have been obvious to increment the counter as a method of modifying the counter especially since decrementing is simply incrementing negative values. Saleh taught to increment counters at each node (col.8, lines 44-48). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Judd and Saleh because Saleh's teaching of setting the counter with a zero initial value and incrementing it at each node enables Judd's method to reach the same result by incrementing counter till it is equal to non-zero initial value instead of counting down to zero.
- As per claim 18, Judd taught the invention as claimed including a method of sending a message packet along a chain network having regenerator nodes from a source node to a destination node using an address protocol having an identifier to identify the message packet as having a relative address protocol (col.2, lines 26-31, col.5, lines 55-59, col.6, lines 14-15), a relative source address for storing an initial value, and a counter (col.2, lines 3-18, 32-41, col.7, lines 64-67), the method comprising the steps of:

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a. Selecting the initial value to be a function of a desired number of node hops along the linear chain from the source node (col.2, lines 3-18, 32-41, col.7, lines 64-67);

- b. Adjusting the counter by a preselected step in value at each node that the message packet is forwarded to (col.2, lines 3-18, 32-41, col.8, lines 44-61); and
- c. Accepting the message packet at a destination node when the counter value reaches the initial value, without requiring address information in addition to the counter reaching the trigger value to accept the message packet (col.2, lines 3-18, 32-41, col.8, lines 44-61),
- d. wherein the counter is adjusted a number of times that is equal to the number of nodes the message packet is forwarded to along the chain network (col.2, lines 3-18, 32-41, col.7, lines 55-63, col.8, lines 44-61; if Hi\_digit = 0h; accept the frame); and
- e. Wherein the preselected step in value is chosen so that the counter reaches the initial value when the packet has completed the desired number of node hops (col.2, lines 3-18, 32-41, col.8, lines 44-61).
- Judd did not specifically teach that adjusting the counter is to increment it. However, since Judd taught that the counter is programmed with the initial value and the counter is modified at each node (col.2, lines 3-18, 31-41), it would have been obvious to increment the counter as a method of modifying the counter especially since decrementing is simply incrementing negative values. Saleh taught to increment counters at each node (col.8, lines 44-48). It would have been obvious to one of ordinary skill in the art at the time the invention was

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made to combine the teachings of Judd and Saleh because Saleh's teaching of setting the counter with a zero initial value and incrementing it at each node enables Judd's method to reach the same result by incrementing counter till it is equal to non-zero initial value instead of counting down to zero.

- 14. As per claim 2, Judd and Saleh taught the invention substantially as claimed in claim 1. Judd further taught an identifier field containing an identifier to identify the message packet as having a relative address protocol (col.6, lines 14-15)
- 15. As per claims 3 and 4, Judd and Saleh taught the invention substantially as claimed in claims 1 and 2. Judd further taught a relative source destination field containing the initial value (col.6, lines 33-35, col.8, lines 43-50).
- 16. As per claim 7, Judd and Saleh taught the invention substantially as claimed in claim 5. Judd further taught that the initial value is an integer having an absolute value equal to the desired number of node hops and the counter is changed by a step in value of one at each node (col.7, lines 64-67). Judd did not specifically teach that the change of the counter is an increment in value. However, since Judd taught that the counter is programmed with the initial value and the counter is **modified** at each node (col.2, lines 3-18, 31-41), it would have been obvious to increment the counter as a method of modifying the counter. Saleh taught to increment counters at each node (col.8, lines 44-48). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Judd and Saleh because Saleh's

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teaching of setting the counter with a zero initial value and incrementing it at each node enables Judd's method to reach the same result by incrementing counter till it is equal to non-zero initial value instead of counting down to zero.

- 17. As per claim 9, Judd and Saleh taught the invention substantially as claimed in claim 7. Judd did not specifically teach that the counter is initially set to zero and the counter is counted up by one at each node hop until the initial value is reached. However, since Judd taught that the counter is programmed with the initial value and the counter is **modified** at each node (col.2, lines 3-18, 31-41), it would have been obvious to increment the counter as a method of modifying the counter. Saleh taught to increment counters at each node (col.8, lines 44-48). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Judd and Saleh because Saleh's teaching of setting the counter with a zero initial value and incrementing it at each node enables Judd's method to reach the same result by incrementing counter till it is equal to non-zero initial value instead of counting down to zero.
- 18. As per claim 10, Judd and Saleh taught the invention substantially as claimed in claim 5. Judd further taught that the initial value is a linear function of the desired number of node hops (col.7, lines 64-67).

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- 19. As per claim 11, Judd and Saleh taught the invention substantially as claimed in claim 5. Judd further taught that wherein at least one node in the linear chain is a regenerator element (col.2, lines 31-39, col.8, 43-50).
- 20. As per claim 13, Judd and Saleh taught the invention substantially as claimed in claim 5. Judd further taught that the chain network comprises a portion of a ring network (col.2, lines 26-31, col.5, lines 61-67, col.6, lines 1; loop).
- 21. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Judd et al (Judd), US 5,465,251, and Saleh et al (Saleh), US 6,801,496, in view of "Official Notice".
- 22. As per claim 12, Judd and Saleh taught the invention substantially as claimed in claim 5. Judd and Saleh did not specifically teach that the chain network is a virtual chain network.

  Official Notice is taken that the limitations narrowed by this claim is considered obvious and furthermore a matter of design choice, since applicants have not disclosed that the claimed limitations solve any stated problem or are of any particular purpose and it appears that the invention would perform equally well without these claimed features. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to efficiently utilize the claimed method in all "types of presenting chain network". Official Notice is taken that it would have been obvious to implement Judd and Saleh's teaching to all applicable network environments. It would have been obvious to one of ordinary skill in the art at the time

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the invention was made to expand Judd's teaching of using hop counters to transmit packets in suitable networks such as virtual network, ring network or other applicable network.

- 23. Claims 15-17 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Judd and Saleh as applied to claims 14 and 18 above, and further in view of "Official Notice".
- As per claims 15 and 19, Judd and Saleh taught the invention substantially as claimed in 24. claims 14 and 18. Judd further taught the message packet to comprise a status query message and further request the destination node to send a status message packet back to the source node (col.11, lines 15-19). Judd and Saleh did not specifically teach the message packet is sent back along the chain having a relative source address field and a counter. However, since Judd taught to use identification field and counter in the message packet, program initial values in hop counter, adjusting the counter by the preselected step in value at each node that the message packet is forwarded to, and accepting the message packet when the counter reaches the initial value (col.2, lines 3-18, 32-41, col.7, lines 64-67, col.8, lines 44-61) and Saleh taught to adjust the counting by increment the counter, it would is obvious to implement such teachings in the status message packet as well (destination node becomes initiator). Official Notice is taken that it would have been obvious to implement the same teaching of using counter and initial value for returning messages in Judd and Saleh's system (sending package to reverse direction). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include Judd and Saleh's teachings of using identification field, counter, counter adjusting and

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packet accepting in not only the message packet sent from the source node, but also the status message packet sent from the destination node back to the source node as well.

- 25. As per claim 16, Judd and Saleh taught the invention substantially as claimed in claim 15. Judd further taught that wherein at least one node in the linear chain is a regenerator element (col.2, lines 31-39, col.8, 43-50).
- 26. As per claim 17, Judd and Saleh taught the invention substantially as claimed in claim 15. Judd further taught to:
  - a. selecting a return message (col.11, lines 15-19);
  - transmitting the return message in the direction to the source node (col.1, lines 15-19);
  - c. incrementing the second counter by the preselected step in value at each node that the message packet is forwarded to (col.2, lines 3-18, 32-41, col.8, lines 44-61); and
  - d. accepting the return message packet at the source node when the second counter reaches the initial value (col.2, lines 3-18, 32-41, col.7, lines 64-67, col.8, lines 44-61).
- As per claim 20, Judd and Saleh taught the invention substantially as claimed in claim 19.

  Judd and Saleh did not specifically teach to send a plurality of the status query messages to a plurality of destination nodes, the destination nodes corresponding to different initial values

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indicating that the destination nodes are each a different number of node hops from the source node and to receive the status message packets from responding destination nodes; and determining the relative distance of responding nodes as a function of the initial value corresponding to each responding node, wherein a fault is isolated to a part of the network subsequent to the responding active node the greatest number of node hops from the source node. However, it would have been obvious to send a plurality of status query message to a plurality of destination nodes and to have the destination nodes to send status message back since Judd taught to send query message to a destination node (col.2, lines 6-9, col.11, lines 15-19) and to send acknowledgement message back to the source node (col.1, lines 15-19). Furthermore, it would have been obvious to use the initial value corresponding to nodes that are each a different number of node hops from the source node to determine the relative distance of them where network fault can be isolated subsequent to the farthest node away from the source node. Official Notice is taken that it would have been obvious to send a plurality of status query message to a plurality of destination nodes. It would have been obvious to one of ordinary skill in the art at the time the invention was made to enable the source node in Judd and Saleh's method to send multiple status query message to multiple destination nodes to obtain status message and determine relative distance of the nodes.

28. As per claim 21, Judd and Saleh taught the invention substantially as claimed in claim 14.

Judd further taught the method to comprise the steps of:

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a. Sending a first status query message packet requesting a return status message
 from a destination node at least one node hope from the source node (col.11, lines 15-19);

- b. Sending at least one subsequent status query message packet requesting a return status message from another destination node corresponding to a different number of node hops from the source node and recording whether the return status message is received at the source node; (col.11, lines 15-19; with different destination).
- 29. Judd and Saleh did not specifically teach to detect a fault in a linear chain of regenerator nodes using the relative address protocol; and determine the node the greatest number of node hops from the source node replying to the status query message directed to it, wherein a fault is isolated to a portion of the chain network subsequent to the node the greatest number of node hops from the source node returning the corresponding status message. However, it would have been obvious to use the initial value corresponding to nodes that are each a different number of node hops from the source node to determine the node the greatest number of node hops from the source node where network fault can be isolated subsequent to it. Official Notice is taken that it is obvious that a fault may be detected when subsequent portion of the network of the node the greatest number of node hops from the source node is reached. It would have been obvious to one of ordinary skill in the art at the time the invention was made to enable the source node in Judd and Saleh's method to send multiple status query message to multiple destination nodes to

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obtain status message and determine relative distance of the nodes and to detect faults when exceeds greatest number of node hops from the source node.

## Response to Arguments

- 30. Applicant's arguments filed 11/3/2005 have been fully considered but they are not persuasive.
- In the remark, applicant argued (1) Judd reference selectively counts only some of the nodes between a source node and a node to which the message packet is to be delivered, based upon what type of intervening nodes are present (see page 9 of the remark).
- 32. Examiner traverse the argument that:

As to point (1), Judd specifically disclosed in the col.2, lines 3-18 that:

The present invention improves upon prior addressing schemes and accordingly provides a method of rolling a message from a source node to a destination node in a network having a plurality of interconnected nodes. A source node issues a message including a path address value specifying the route through the network which the message is to take to the destination node. The message is then received by a first node connected to the source node, The receiving node determines whether a predetermined portion of the path address value corresponds to a predetermined value and if so accepts the message. Otherwise, the node modifies the path address value and then transfers the message including the modified path address value onto the next node. The steps of receiving, determining and transferring are then repeated at each subsequent node until the route address value corresponds to a predetermined value at which point the message has reached the destination node.

Judd further disclosed in col.2, lines 32-43 that:

In a preferred method, a dual-ported node on determining that the path address does not correspond to the predetermined value, decrements the portion of the path address before passing the message on to the downstream node. If the next node is also

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dual-ported then it will process the path address in the same way. The destination node is the node which receives a message including a path address having a zero value. Thus strings or loops of interconnected dual-port nodes are effectively addressed by decrementing a 'hop count.' This method is simple, efficient, and eliminates the possibility for a message frame to circulate on a loop indefinitely.

This reads on the claim language of wherein the counter is decremented a number of times that is equal to the number of nodes the message packet is forwarded to along the chain network since the linear chain network may be implemented with interconnected dual-port nodes. Saleh taught to increment counters at each node (col.8, lines 44-48). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Judd and Saleh because Saleh's teaching of setting the counter with a zero initial value and incrementing it at each node enables Judd's method to reach the same result by incrementing counter till it is equal to non-zero initial value instead of counting down to zero. Furthermore, in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the counter counts the number of nodes from a source node to which the message is to be delivered, regardless of what type of intervening nodes are present) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The claims do not define that the linear chain network contain different types of nodes. In addition, applicant defined "nodes" in page 9 of the applicant's specification to interconnect with at least two data communication lines. This clearly showed that the nodes in applicant's invention are duel-port nodes.

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### Conclusion

33. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenny Lin whose telephone number is (571) 272-3968. The examiner can normally be reached on 8 AM to 5 PM Tue.-Fri. and every other Monday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on (571) 272-3964. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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ksl January 5, 2006

> JOHN FOLLANSBEE ERVISORY PATENT EXAMINER ECHNOLOGY CENTER 2100